

# STUDENTS' KNOWLEDGE ABOUT FOETAL ALCOHOL SYNDROME AND THEIR ALCOHOL DRINKING HABITS

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## Authors' contribution:

A. Study design/planning • B. Data collection/entry • C. Data analysis/statistics • D. Data interpretation • E. Preparation of manuscript • F. Literature analysis/search • G. Funds collection

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## ABSTRACT

**Introduction:** Foetal alcohol syndrome (FAS) is the most serious complication of intrauterine exposure to ethanol, causing congenital disorders and improper emotional development. Despite health education and numerous social campaigns focused on increasing the awareness about the effects of alcohol on the foetus, such knowledge is not sufficiently common among people of procreative age.

**Aim of the study:** The aim of the study was to assess students' knowledge about FAS. Also, the study examined their alcohol drinking habits and identified their opinions on alcohol consumption during pregnancy.

**Material and methods:** The study was conducted in Krakow in April and May 2017 among a group of 174 students: 93 psychology students from Jagiellonian University and 81 civil engineering students from Cracow University of Technology. A diagnostic survey was performed, and a questionnaire prepared for the study was used as a research tool.

**Results:** The majority of respondents were familiar with the term FAS (81.61%,  $n = 142$ ). Social campaigns were the most common source of knowledge about FAS in the study group (50.57%,  $n = 88$ ). Respondents who had sufficient knowledge about FAS were in the minority (39.65%,  $n = 69$ ). Most of them admitted drinking alcohol once a week (36.21%,  $n = 63$ ).

**Conclusions:** It has been shown that the field of study significantly affects the level of knowledge about FAS. Sex significantly influences drinking habits. The type and the amount of alcohol consumed by the students was related with their opinions about abstinence during pregnancy.

**Key words:** health knowledge, alcohol drinking, foetal alcohol spectrum disorder.

## INTRODUCTION

The influence of alcohol on the development of foetal malformations has been confirmed by numerous scientific publications [1, 2]. Foetal alcohol spectrum disorder (FASD) includes foetal alcohol syndrome (FAS), partial FAS (PFAS), alcohol-related neurodevelopmental disorder (ARND), and alcohol-related birth defects (ARBD) [3]. It remains a research topic for scientist of various fields of science. Health education within the prevention of FASD is carried out by employees of educational institutions, health care professionals, and is supported by information programs and social campaigns in the media. Despite this, the level of knowledge about FASD is still insufficient among people of procreative age [4, 5], and misconceptions such as believing that wine drinking during pregnancy is less harmful for the foetus are also common [4]. FAS is the most serious complication of intrauterine etha-

nol exposure. It includes characteristic facial features, central nervous system damage and dysmorphia of limbs, internal organs, and sensory organs [6, 7]. It can cause difficulty with concentration, long-term memory, and learning abilities, including problems with abstract thinking and understanding the concept of time or space [7, 8]. Despite knowledge about the harmful effects of alcohol on the foetus, pregnancy abstinence is still a problem. A study published by Mårdby *et al.* showed the scale of it in Europe [9]. The research was conducted in 11 European countries and it consisted of 7905 women. Almost 16% of the study group admitted to drinking alcohol during pregnancy. The highest rates of women drinking during pregnancy was found in the United Kingdom (28.5%) and Russia (26.5%) and the lowest in Norway (4.1%). Poland was the country with the third lowest percentage of alcohol consumption during pregnancy (9.7%) [9]. These results were similar to those from the "Health behaviours of pregnant

women" report from 2013, which showed that almost 90% of the 2833 respondents did not drink alcohol during pregnancy [10]. According to a study published by Wyka *et al.*, 90% of pregnant women were aware of the negative effects of alcohol on the foetus, but only 83.6% declared abstinence after they become pregnant [11]. Young adults from Traverso and Da Rin Della Mora research were also aware of the damage that alcohol can cause on the foetus (76.4%), but only 23.5% of the students knew that this damage is permanent. Also, 30.1% of the study group thought that drinking during pregnancy is allowed and has no negative effects [12]. Such results may indicate the universality of misconceptions regarding the consumption of alcohol during pregnancy. Increasing knowledge related to beliefs and opinions could be helpful in planning preventive programs aimed at people of childbearing age.

## AIM OF THE STUDY

The aim of the study was to assess students' knowledge about FAS and to assess students' drinking habits such as the frequency, amount, and type of consumed alcohol, as well as to reveal their opinions about drinking alcohol during pregnancy.

## MATERIAL AND METHODS

The study was conducted in April and May 2017. The study group consisted of students of psychology at the Jagiellonian University and civil engineering students from Cracow University of Technology. The study was conducted according to the criteria set by the declaration of Helsinki. Participation in the research was voluntary. Respondents were informed about its anonymity and the possibility of resignation at any stage.

The questionnaires were completed by 174 people: 93 psychology students and 81 civil engineering students. The study used a diagnostic survey method. There were a total of 26 questions on this online survey, developed by the authors. The level of students' knowledge about FAS was assessed and categorised based on a series of questions in the first part of the survey. The questions referred to somatic and neurobehavioural changes arising in FAS and their impact on the further development and functioning of the child. On the basis of the normal distribution curve, the mean of the right answers was established as 63% and the standard deviation as 19%. The categorisation of the level of students' knowledge was established as the percentage of correct answers and was presented as follows: very good > 82%, good: 63-81%, adequate: 44-62%, inadequate < 44%. In the next part of the survey, respondents' opinions on the consumption of alcohol by pregnant women were checked. Respondents were asked to comment on three statements about alcohol drinking during preg-

nancy by marking their opinion on a five-point Likert scale. The last part was used to assess students' drinking behaviours in the context of the frequency, amount, and type of alcohol consumed by them.

The obtained data were analysed using Microsoft Excel 2010 and Statistica ver. 10.0 PL. In order to determine the dependence between selected variables, the  $\chi^2$  test was used. Statistical significance was assumed at the level of  $\alpha = 0.05$ .

## RESULTS

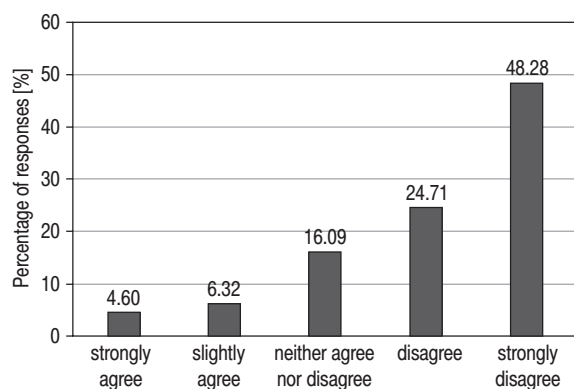
The largest group of the respondents were people aged 22-23 years (33.91%,  $n = 59$ ). Most of the surveyed were women (78.74%,  $n = 137$ ) and full-time students (85.63%,  $n = 149$ ). Psychology students constituted more than half of the study group (53.45%,  $n = 93$ ). The majority of the respondents were living in rural areas (41.38%,  $n = 72$ ).

### Students' knowledge in the field of foetal alcohol syndrome

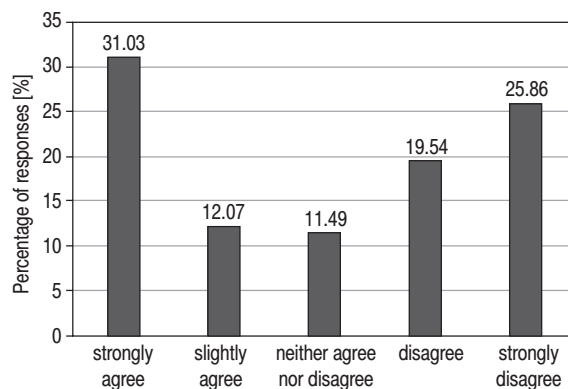
More than 80% (81.61%,  $n = 142$ ) of the students were familiar with the term of FAS. As the source of knowledge about FAS, most of the participants indicated social campaigns (50.57%,  $n = 88$ ), their academic classes (29.89%,  $n = 52$ ), and health education conducted by the health care professionals (9.77%,  $n = 17$ ).

The vast majority of respondents thought that alcohol has a negative influence on the foetus in every trimester of pregnancy (89.66%,  $n = 156$ ), and only one respondent thought that alcohol had no influence on foetal development. Most of the students (80%,  $n = 139$ ) thought that the placenta is not a protective barrier and every dose of alcohol can penetrate to the foetus.

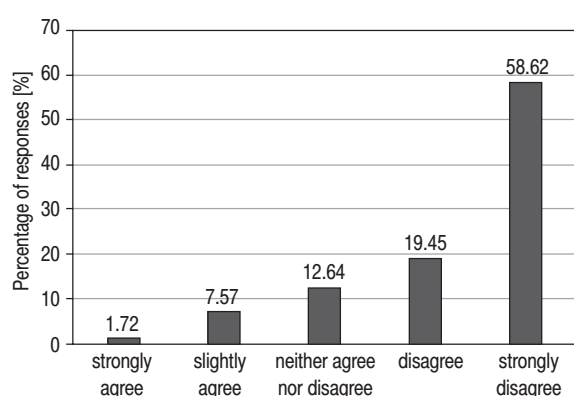
In multiple-choice questions respondents were asked to mark all the correct statements about FAS. According to 85.63% ( $n = 149$ ) of students, alcohol impairs the development of the foetal internal organs, and causes face dysmorphism and problems with intrauterine nutrient absorption. For the changes that alcohol can cause during the first trimester, most often the respondents chose kidney, liver, and heart deformation (62.07%,  $n = 108$ ). More than half of the participants thought that alcohol consumption in the first trimester can cause permanent brain damage (58.62%,  $n = 102$ ) and miscarriages (52.3%,  $n = 91$ ). In the respondents' opinions, alcohol during the second trimester can lead to bone, gland (75.86%,  $n = 132$ ), and muscle cell damage (64.37%,  $n = 112$ ). Only 2.87% ( $n = 5$ ) of students did not acknowledge the influence of ethanol on the foetus in this trimester. The vast majority of the study group thought that alcohol consumption during the third trimester can restrict the foetal weight gain (71.84%,  $n = 125$ ), cause the pre-term birth (67.82%,  $n = 118$ ), and intrauterine death



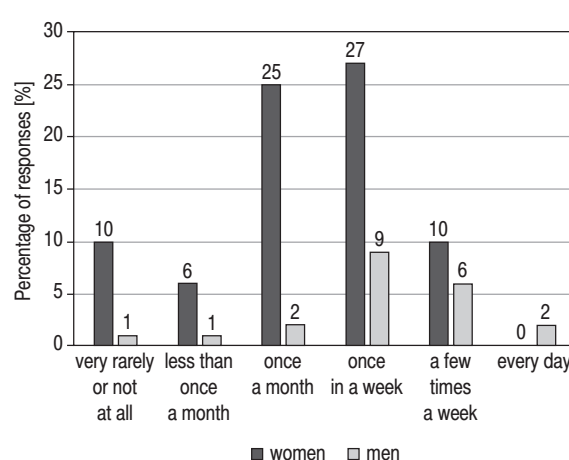
**Figure 1.** Respondents' opinions on the myth that it is recommended to drink one glass of wine by pregnant women with anaemia



**Figure 2.** Respondents' opinion about the statement "It is impossible to determine the dose of alcohol that can be harmful for the child"



**Figure 3.** Respondents' opinion about the statement "It is recommended to drink wine shortly before the date of delivery"



**Figure 4.** Frequency of respondents' alcohol consumption

(42.53%,  $n = 74$ ); 5.17% of respondents ( $n = 9$ ) declared than none of the previously mentioned complications can occur during third trimester. The vast majority of respondents answered that changes caused by intra-uterine exposition to alcohol are irreversible (91.38%,  $n = 159$ ) and can occur in every trimester (81.61%,  $n = 142$ ). Difficulties in assimilating new information (83.91%,  $n = 146$ ) and inability to focus attention (82.18%,  $n = 143$ ) were more linked with FAS according to participants' answers, than for example difficulties with initiating intrapersonal contact (60.34%,  $n = 105$ ).

In the next part of the survey respondents expressed their opinions on myths about alcohol consumption during pregnancy.

### Students' opinions about drinking during pregnancy

The first myth referred to wine consumption by pregnant women with anaemia. Almost half of the students strongly disagreed with this myth (48.28%,  $n = 84$ ) and 24.71% ( $n = 43$ ) slightly disagreed. Almost 11% ( $n = 19$ ) agreed with the myth (Figure 1).

Over 1/4 of the surveyed (25.86%,  $n = 45$ ) strongly disagreed with the statement "It is impossible to determine the dose of alcohol that can be harmful for the child", and only 31.03% ( $n = 54$ ) strongly agreed with the statement (Figure 2).

More than half of the students (58.62%,  $n = 102$ ) strongly disagreed with the statement that drinking wine shortly before the date of delivery is recommended, 19.54% ( $n = 34$ ) slightly disagreed. Only 7.47% ( $n = 13$ ) of students slightly agreed (Figure 3).

### Students' alcohol drinking habits

The largest number of respondents declared that they drink once in a week (36.21%,  $n = 63$ ). Only three surveyed (1.72%) admitted that they drink every day, and all of them were male students. Only one man and 18 women (10.92%) declared that they drink very rarely or not at all (Figure 4).

Beer (41.38%,  $n = 72$ ) and wine (41.38%,  $n = 72$ ) were the most frequently consumed types of alcohol, followed by stronger drinks (13.22%,  $n = 23$ ). The largest number of the respondents declared drinking

2-3 beers or a few glasses of wine or 100-200 g of vodka (35.06%,  $n = 96$ ). One beer or one glass of wine or 50 g of vodka was the amount of alcohol declared by 35.06% of students ( $n = 61$ ). Only 15 participants (8.62%) admitted to consuming significant amounts of ethanol.

To assess the correlation between sex and frequency, type, and amount of consumed alcohol in the study group, the  $\chi^2$  independence test was performed. There were statistically significant correlations between respondents' sex and the frequency of alcohol consumption ( $p = 0.0002$ ), type ( $p = 0.0001$ ), and the amount of consumed alcohol ( $p = 0.0005$ ). Male students drank more and more often. Female students preferred wine (Table 1).

The respondents' knowledge was categorised according to their answers about FAS. The average percentage of correct answers was 63%. Very good level of knowledge about FAS was represented by 22.42% ( $n = 39$ ) of those surveyed, 5.45% ( $n = 10$ ) of whom were civil engineering and 16.67% ( $n = 29$ ) psychology students. Sufficient level of knowledge was represented by the largest group of respondents – 39.65% ( $n = 69$ ). Over two times more civil engineering students (10.92%,  $n = 19$ ) presented insufficient level of knowledge about FAS compared to psychology students (5.17%,  $n = 9$ ).

Statistically significant correlations were found between the field of study and level of knowledge about FAS ( $p = 0.0068$ ) – psychology students presented a better level of knowledge. There was no statistically significant correlation between knowledge about FAS and the source of knowledge ( $p = 0.1331$ ), sex ( $p = 0.4157$ ), and respondents' place of living ( $p = 0.8574$ ).

Statistically significant correlations were found between the type ( $p = 0.0292$ ) and amount of consumed alcohol ( $p = 0.0018$ ) and respondents' opinion on alcohol consumption during pregnancy. Students who drank wine and beer in small amounts were in favour of abstinence during pregnancy. There was no statistically significant correlation between the frequency of alcohol consumption and opinion about abstinence during pregnancy ( $p = 0.1122$ ) (Table 2).

## DISCUSSION

The high level of awareness about FAS in the study group (82%) is similar to the results from the study conducted by Zarzeczna-Baran *et al.* at the Medical University in Gdansk and Gdansk University of Technology, in which 72% and 70% of students, respectively, were familiar with FAS [13]. Comparable results were found in the study conducted by Kaźmierczak *et al.* (75% of surveyed) [14]. Awareness of the negative effects of alcohol consumption during the first trimester of pregnancy was declared by more than half

**Table 1.** Alcohol drinking habits and respondents' sex

Variable	$\chi^2$	Df	P-value
Alcohol consumption frequency and respondents' sex	24.413	5	<b>0.0002</b>
Type of consumed alcohol and respondents' sex	22.352	3	<b>0.0001</b>
Amount of alcohol consumption and respondents' sex	17.931	3	<b>0.005</b>

Df – degree of freedom

**Table 2.** Alcohol drinking habits and respondents' opinion on abstinence during pregnancy

Variable	$\chi^2$	Df	P-value
Alcohol consumption frequency and opinion about abstinence during pregnancy	27.881	20	0.1122
Type of consumed alcohol and opinion about abstinence during pregnancy	22.836	12	<b>0.0292</b>
Amount of alcohol consumption and opinion about abstinence during pregnancy	31.252	12	<b>0.0018</b>

Df – degree of freedom

of the study group, which is similar to the result seen in Klimberg *et al.*'s study. Nonetheless, they showed that only 1/3 (33.9%) of the surveyed were aware of the fetopathy that can occur in the second trimester as a result of the mother's alcohol consumption [15]. In our research this percentage is almost three times higher (97.1%), but it should be noted that the study group consisted of psychology students who were taught about FAS during their course of study.

Our own study showed that almost 84% of respondents were aware of the influence of FAS on the child's cognitive abilities and forming intrapersonal relations in later life (83.9%). A higher percentage was presented by Zarzeczna-Baran *et al.*, in whose study this influence was noted by the 97% of participants [13].

In the conducted research the knowledge about the consequences of drinking alcohol during pregnancy was evaluated as correct in almost 84% of those surveyed. Irreversibility of the FAS complications was declared by 91.4% of students, which is higher than in Kaźmierczak *et al.*'s study (76%) [14]. Brems *et al.* showed that knowledge about FAS among college students was adequate, with an 85% accuracy rate or higher in the tests.

In our own research, similar to that conducted at Poznan University of Medical Sciences and the Higher School of Physical Education and Tourism in Supraśl, alcohol consumption was higher amongst men. There were also statistically significant differences between sex and anti-health behaviours related to the type, amount, and frequency of alcohol consumption. Male



students drank more than female students [16, 17]. Klimberg *et al.* emphasise that episodes of drinking until losing consciousness were more often declared by men (49.3%) than women (31.4%) [16]. On the other hand, in Szczerbiński *et al.*'s study alcohol abuse during the last year was declared by 100% of male and 76.7% of female students of tourism and recreation and by 100% of male and 44.4% of female students of physical education [17]. Drinking multiple times during the last three days was declared by 51.4% of surveyed students in a study Kułak *et al.* [18]. As is shown in the studies by Peardon *et al.*, Skagerström *et al.*, and Anderson *et al.*, alcohol consumption in the preconception period is one of the risk factors of drinking alcohol during pregnancy [19–21]. These results emphasise the importance of the problem of alcohol consumption among young students.

The frequency and amount of consumed alcohol was linked with the respondents' approach to abstinence. In the conducted study it was shown that students who were drinking strong alcohol in large, uncontrolled amounts declared that alcohol has no influence on pregnancy (0.57%,  $n = 1$ ), or that it can have influence on pregnancy but only in the third trimester (0.57%,  $n = 1$ ). Amongst the participants who were in favour of abstinence during pregnancy, the two largest groups consisted of students drinking wine (40.2%) and beer (36.2%) in controlled amounts.

It should be noted that myths about alcohol consumption during pregnancy are common and education about it might be inadequate. Almost half of the surveyed (46%) claimed that it is possible to assess the lowest, safe dose of alcohol for pregnant women. In a study conducted by Kaźmierczak *et al.* more than 70% of respondents were familiar with the statement that red wine is good for expectant mothers' health [14]. In our own research only 11% of students agreed with that statement. On the other hand, in the study conducted by the FAScynujące Foundation it was shown that 24.4% of surveyed pregnant women got permission from their obstetrician to drink a glass of red wine occasionally [22]. Based on these results, it can be noted that the problem of drinking alcohol during pregnancy, its consequences on the developing foetus, and the myths that have grown around it should be discussed during the preconception period to prevent intrauterine alcohol exposure of the foetus. This can be an opportunity for nurses and especially midwives to engage in education of teenagers. Education should be focused on the harmful effects of even small doses of ethanol on the foetal development and the irreversibility of those effects.

## CONCLUSIONS

Field of study had a substantial impact on the respondents' level of knowledge about FAS. It was shown

that psychology students presented a higher level of knowledge about FAS than did civil engineering students. Respondents' sex had an impact on their drinking habits. Male students drank more and more often. Despite the fact that the general level of knowledge about alcohol consumption during pregnancy was rated as good, the study indicates numerous false beliefs in the study group, such as the possibility of drinking a minimal dose of alcohol that will not be harmful for the foetus. The conducted research indicates a statistically significant correlation between the type and amount of alcohol consumed by the students and their attitudes to alcohol drinking during pregnancy. Those who drank wine and beer in small amounts were in favour of abstinence during pregnancy.

## Disclosure

The authors declare no conflict of interest.

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